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# Coding Boot Camp



[learndelphi.org/boot-camp-2022](https://learndelphi.org/boot-camp-2022)





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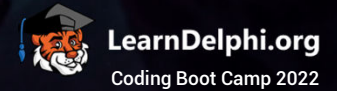
# Session : Core22


Introduction to ADO and ADO Applications





# About Bertie Buitendag



- Lecturer at the department of Computer Science at the Tshwane University of Technology in South Africa
- Passionate about Delphi since Borland Delphi Version 2.0 (1996)
- Assisted with the development of the IT secondary school curriculum in SA
- Embarcadero MVP and Delphi evangelist
- Lives in Pretoria in sunny SA 
- Love comedy and are in the aquarium fishing hobby



# Session outline

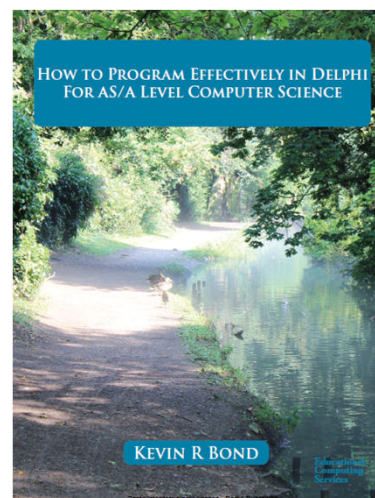


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- Data access and data aware applications
- Overview of ADO and FireDac
- Basic ADO Example
- Exercise Sample notes set
- Q & A

Textbook reference chapters

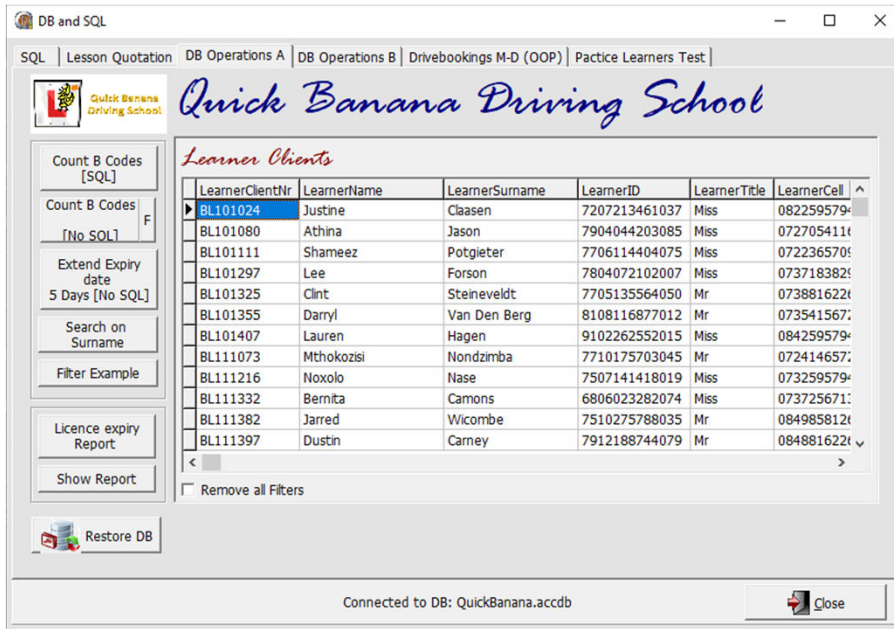


Chapters 55 to 60



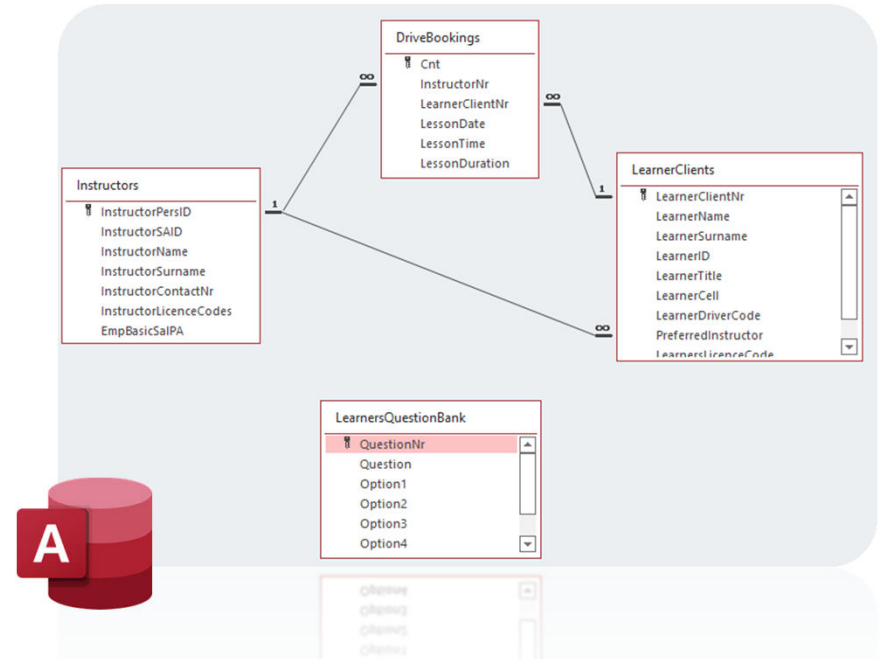
# Database Applications

Database applications let users interact with information that is stored in databases



The screenshot shows a database application window titled "Quick Banana Driving School". It features a table of "Learner Clients" with columns: LearnerClientNr, LearnerName, LearnerSurname, LearnerID, LearnerTitle, and LearnerCell. The table contains 15 rows of data. On the left, there are buttons for "Count B Codes [SQL]", "Extend Expiry date 5 Days [No SQL]", "Search on Surname", "Filter Example", "Licence expiry Report", and "Show Report". At the bottom, it says "Connected to DB: QuickBanana.accdb".

| LearnerClientNr | LearnerName | LearnerSurname | LearnerID     | LearnerTitle | LearnerCell |
|-----------------|-------------|----------------|---------------|--------------|-------------|
| BL101024        | Justine     | Clasen         | 7207213461037 | Miss         | 082259579   |
| BL101080        | Athina      | Jason          | 7904044203085 | Miss         | 072705411   |
| BL101111        | Shameez     | Potgieter      | 7706114404075 | Miss         | 072236570   |
| BL101297        | Lee         | Forson         | 7804072102007 | Miss         | 073718382   |
| BL101325        | Clint       | Steineveldt    | 7705135564050 | Mr           | 073881622   |
| BL101355        | Darryl      | Van Den Berg   | 8108116877012 | Mr           | 073541567   |
| BL101407        | Lauren      | Hagen          | 9102262552015 | Miss         | 084259579   |
| BL111073        | Mthokozisi  | Nondzimba      | 7710175703045 | Mr           | 072414657   |
| BL111216        | Noxolo      | Nase           | 7507141418019 | Miss         | 073259579   |
| BL111332        | Bernita     | Camons         | 6806023282074 | Miss         | 073725671   |
| BL111382        | Jarred      | Wicombe        | 7510275788035 | Mr           | 084985812   |
| BL111397        | Dustin      | Carney         | 7912188744079 | Mr           | 084881622   |



# ADO



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ADO gives developers a powerful, logical object model for programmatically accessing, editing, and updating data from a wide variety of data sources through OLE DB system interfaces. The most common usage of ADO is to query a table or tables in a relational database, retrieve and display the results in an application, and perhaps let users make and save changes to the data

(<https://docs.microsoft.com/en-us/sql/ado/guide/data/ado-fundamentals?view=sql-server-ver16>)

dbGo applications use Microsoft ActiveX Data Objects (ADO) 2.1 to interact with an OLE DB provider that connects to a data store and accesses its data. One of the items a data store can represent is a database. An ADO-based application requires that ADO 2.1 be installed on the client computer. ADO and OLE DB is supplied by Microsoft and installed with Windows. ([https://docwiki.embarcadero.com/RADStudio/Sydney/en/Connecting\\_to\\_ADO\\_Data\\_Stores](https://docwiki.embarcadero.com/RADStudio/Sydney/en/Connecting_to_ADO_Data_Stores))



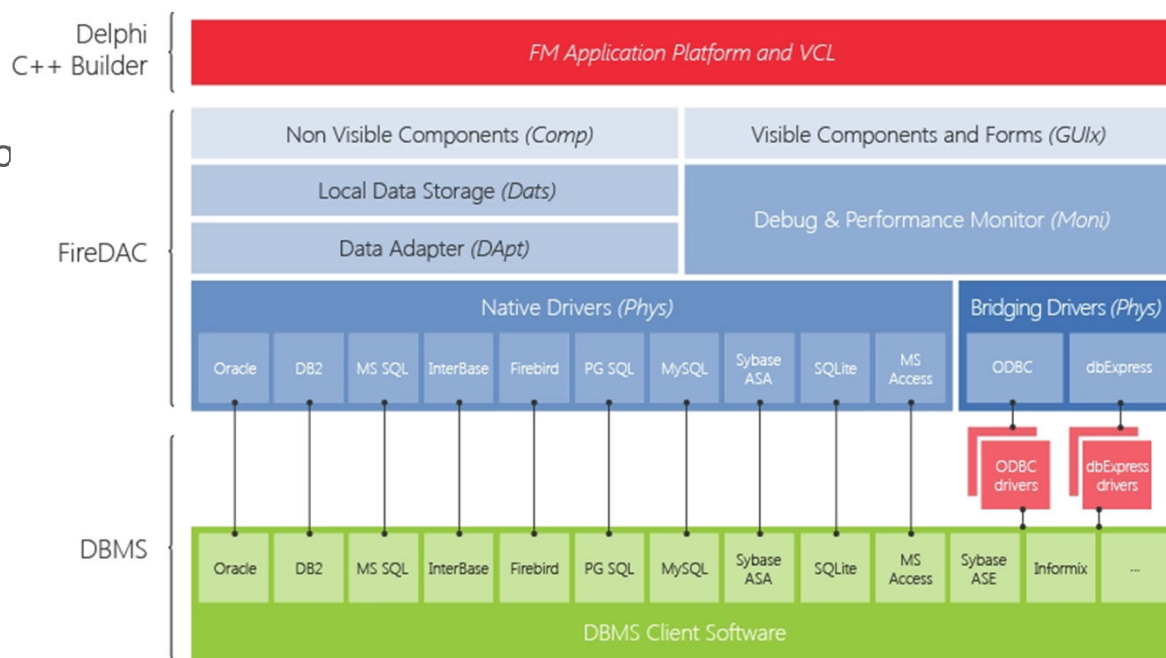
# FireDAC

FireDAC is RAD Studio's newest data access framework, has quickly become the data access framework of choice.

FireDAC is a Universal Data Access library for developing applications for multiple devices, connected to enterprise databases.



[https://www.youtube.com/watch?v=WS1A3v5\\_I98](https://www.youtube.com/watch?v=WS1A3v5_I98)





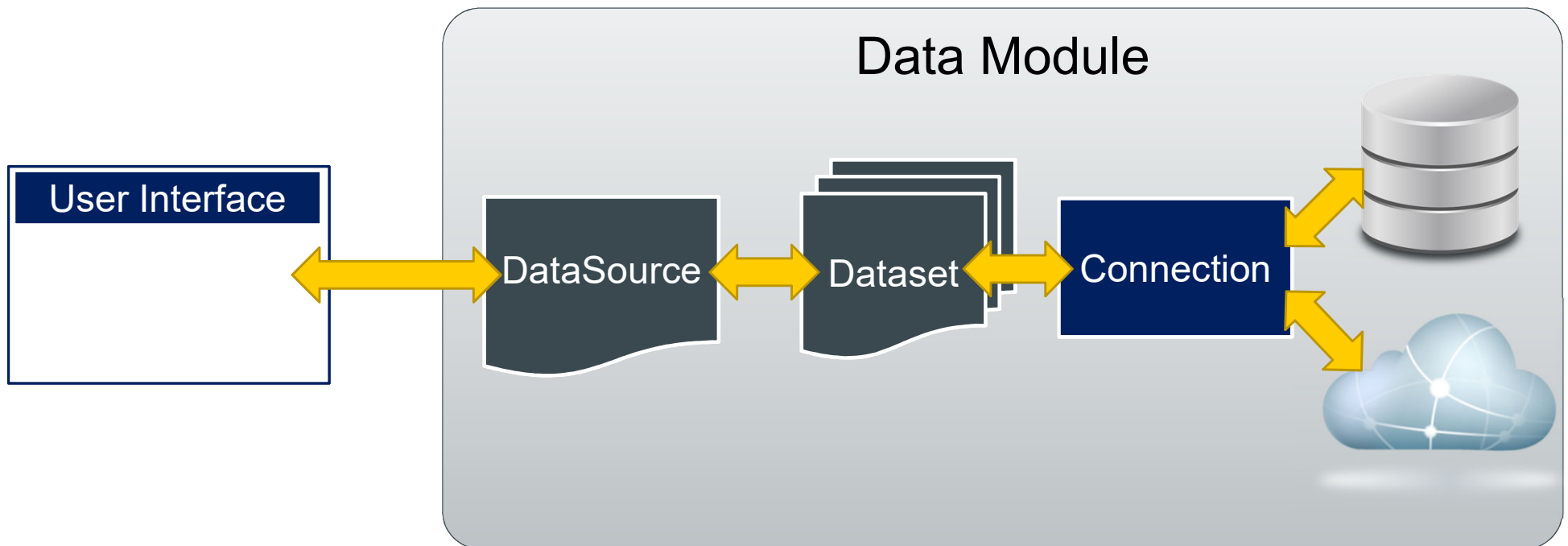
# Working with Databases

- FireDAC is the new, high performance, cross platform, multi-database component framework that is included “in the box”
  - On mobile FireDAC supports SQLite, IBLite (Free), & IBToGo (IBToGo adds encryption and more for a license fee)
  - FireDAC Overview: [embt.co/FireDACOverview](https://embt.co/FireDACOverview)
  - FireDAC Mobile Tutorial: [embt.co/FireDACMobile](https://embt.co/FireDACMobile)
- FireMonkey doesn't have specific data aware controls, instead any component can be connected to any data via LiveBindings
  - [embt.co/LiveBindings](https://embt.co/LiveBindings)

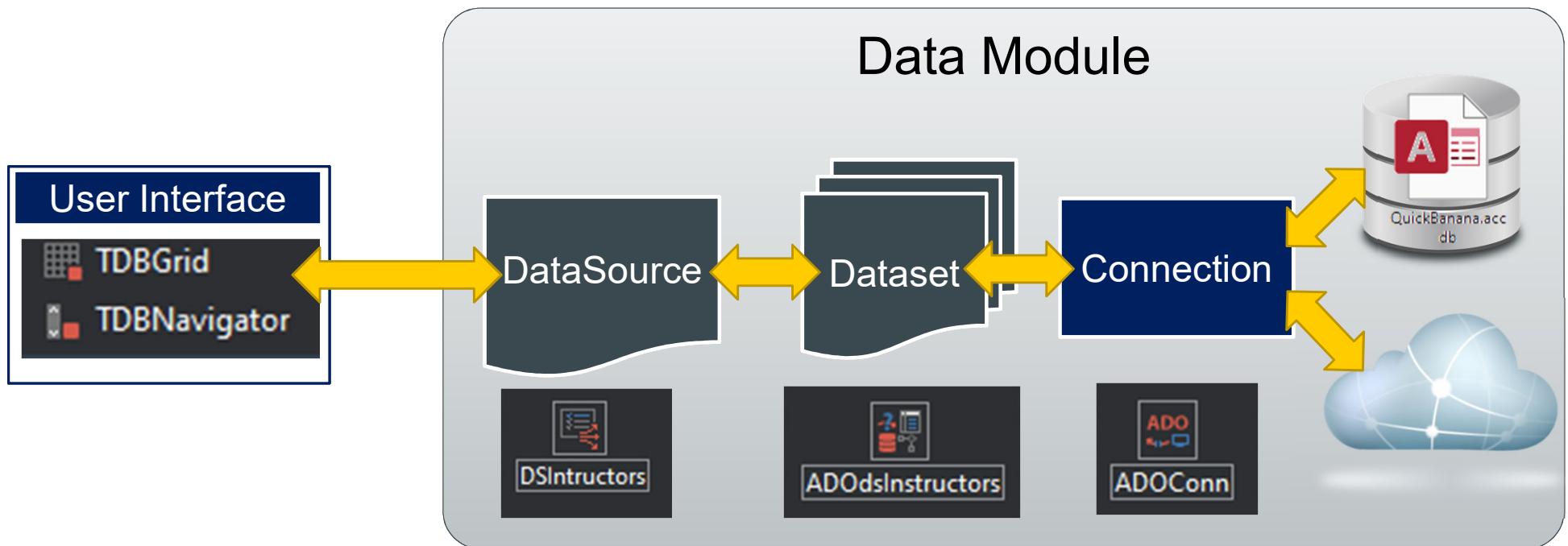




# Simple DB Architecture



# Simple DB Architecture



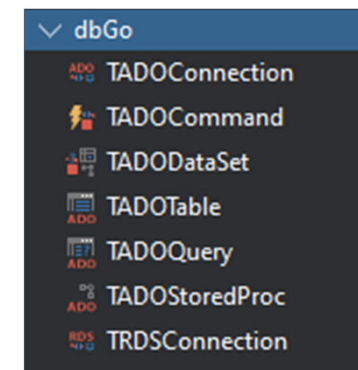
# Delphi Database Architecture

- User interface form
  - Represents a window or dialog box that makes up an application's user interface
- Data-aware controls
  - Represent data from fields in a database record
- Data Module
  - Special form (container) that contains non-visual components
- Data Source
  - Conduit between the user interface and a dataset



# DBGo

dbGo provides the developers with a powerful and logical object model for programmatically accessing, editing, and updating data from a wide variety of data sources through OLE DB system interfaces.





# Delphi Database Architecture



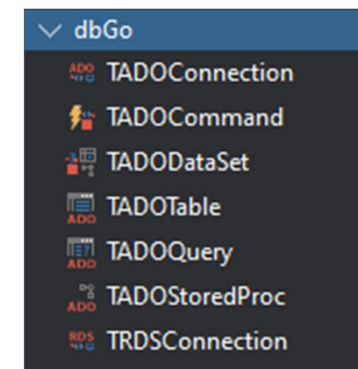
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- Data connection

- Mechanisms for connecting to the data:
  - Connecting directly to a database server
  - Using a dedicated file on disk
  - Connecting to another dataset

- TADOConnection component

- TADOConnection connects to an ADO data store.
- TADOConnection encapsulates the ADO connection object.
- Use TADOConnection for connecting to ADO data stores.

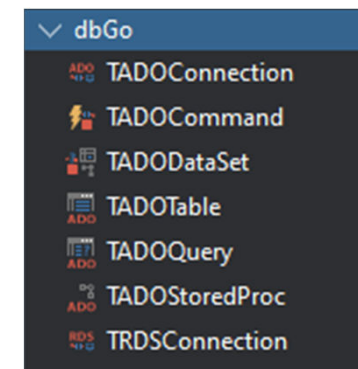


# Delphi Database Architecture



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- Dataset
  - “Heart of database applications”
  - Represents a set of records from a database organized into a logical table
- Types of Datasets
  - *Table*
  - *Query*
  - *Stored Procedure*
- TADODataset component – dbGo dataset





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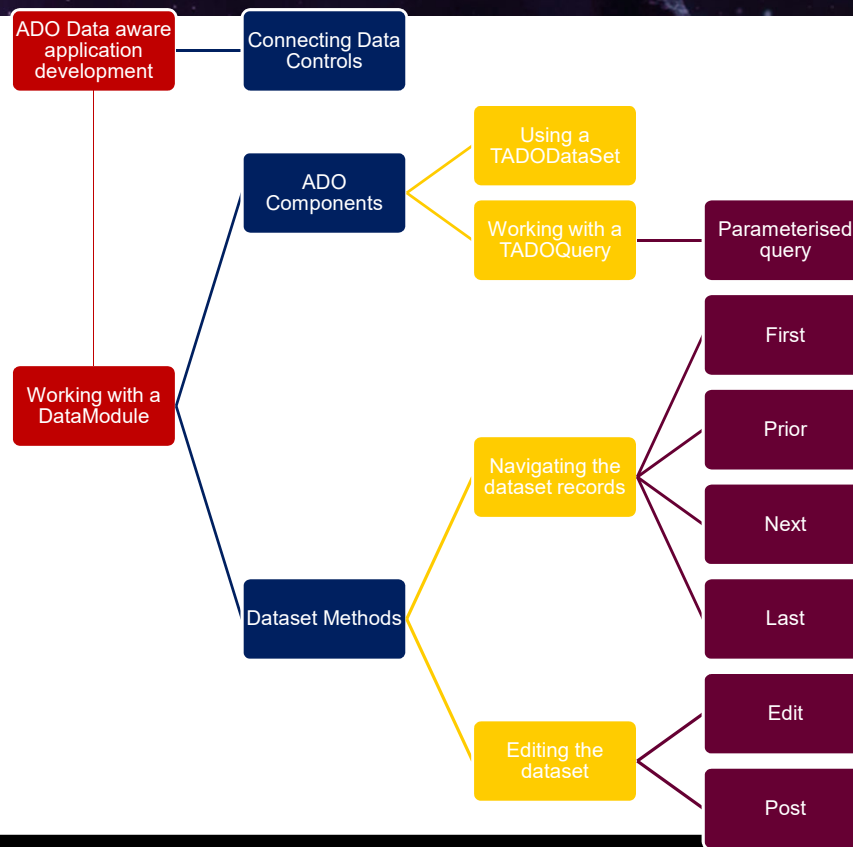
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# What we have covered



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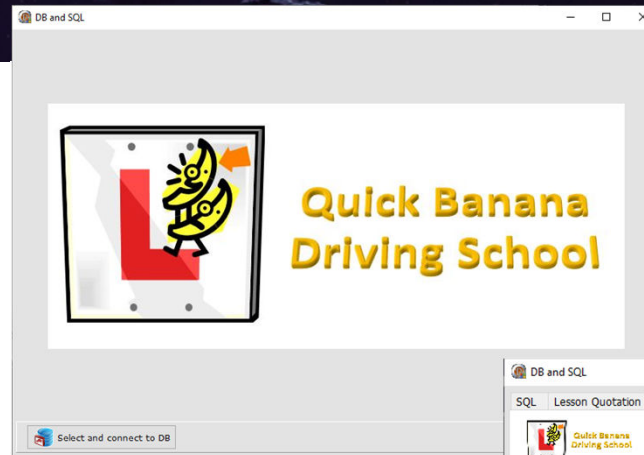
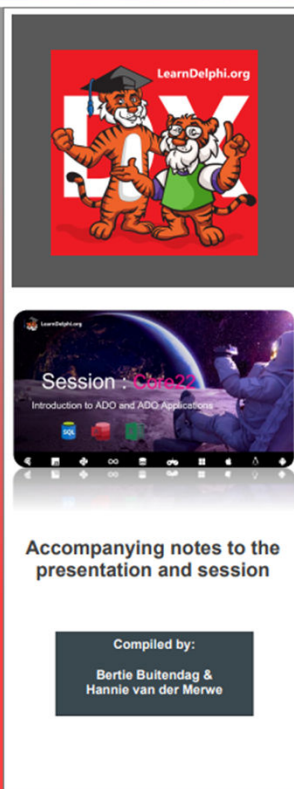


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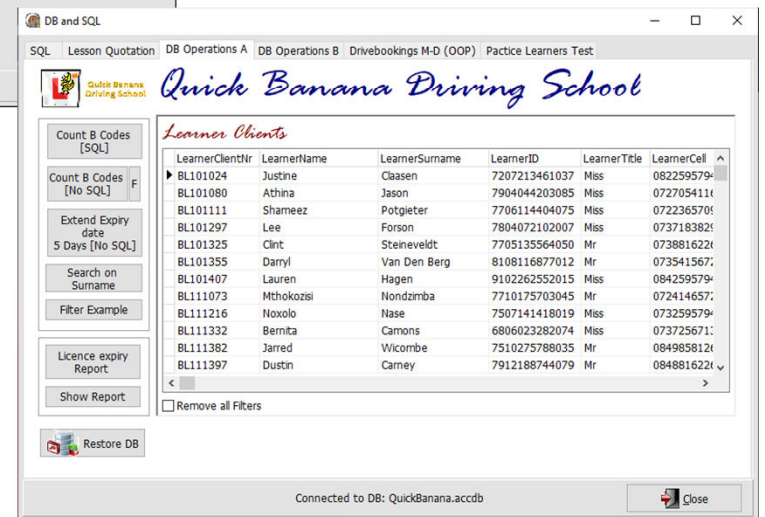
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# Example with Notes



Slides + extra  
examples and notes  
available on GitHub





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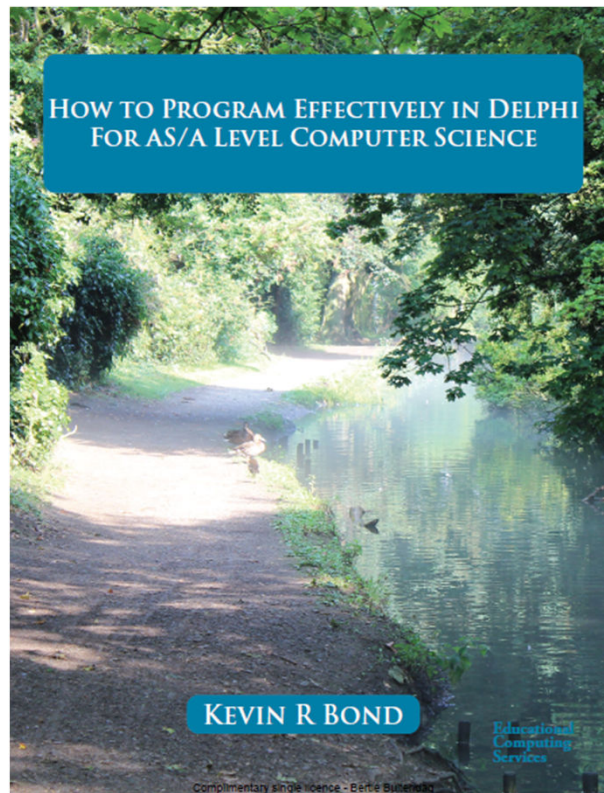
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# Resources

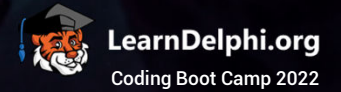


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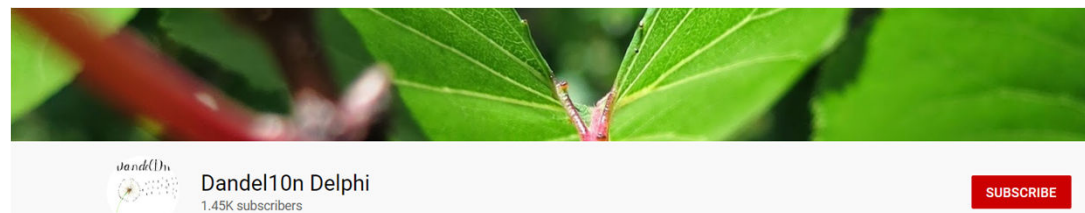
# Resources



<https://www.youtube.com/c/DelphiSchoolsDelphiProgrammingTutorials>



<https://www.youtube.com/channel/UCPQG0dcSGvOP20NLcjnYTPQ>



<https://www.youtube.com/channel/UCITMwGlsiKgY5Z-F5ZaCH4w/videos>



# Resources



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# LearnDelphi.tv



**Alister Christie**  
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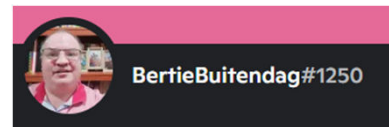
# Questions and Answers posts



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# Discord







**Label1.Caption** := 'Thank you 😊';





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# Thank you!



Get the code:  
[github.com/Embarcadero/CodingBootCamp2022](https://github.com/Embarcadero/CodingBootCamp2022)

